

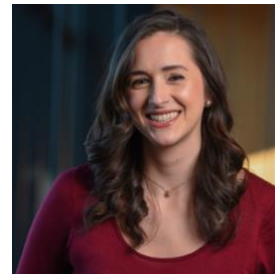
UNDERGRADUATE MATH SEMINAR

The next math seminar on the term will be

DATE: THURSDAY, October 14

Time & 12:30 – Refreshments in **Bailey 204**

Location: 12:55 – 1:45 Seminar in **Bailey 207**



Professor
Michelle Rabideau

In this seminar, **Professor Michelle Rabideau** from the Department of Mathematics the **University of Hartford** will deliver the following talk:

Title: Connecting Cluster Algebras to Continued Fractions and Snake Graphs

Abstract: In many areas of mathematics, it is often beneficial to represent objects graphically or numerically. In this talk, we study the class of commutative rings called cluster algebras and their elements called cluster variables. We will focus on one particular characteristic of a cluster variable and study it by considering graphs of square tiles called snake graphs and using numerical tools called continued fractions. The talk will emphasize how mathematicians often change strategies when the current method becomes too abstract, too tedious or too time consuming to be reasonable.

My Summer Research, by Zhebin (Irene) Yin '22

This summer, I did research on the classification of lung cancer circulating tumor cells in liquid biopsy by using deep learning with Prof. Wang. This research is a perfect combination between Mathematics and Computer Science. More importantly, this research is very meaningful in that we are applying these “magical wands” to the healthcare field to help those who are suffering from cancer relieve and live a better life.



Irene Yin taking a break from her research

The knowledge I got from this summer research project is far more than I expected. It not only helped me get my interests on the ground but also inspired me a lot for my future career path and research direction. With the great help and useful instructions from **Professor Jue Wang**, I learned a lot about the Deep Learning Neural Network, particularly the U-Net architecture and Convolutional Neural Network (CNN), which is very good at image classification and biomedical illustration detection. We used the CNN model to train the private dataset from the lung cancer patients in the hospital. The dataset is extracting from the lung cancer patient’s bloodstream by using liquid biopsy. There were four types of lung cancer that we were trying the classify: A-one, B-four, N-one, and P-one. The goal of this research is to see how would the Deep Learning architectures perform on classifying the types of lung cancers, and see whether we could increase the accuracy and efficiency of classification biomedical images. Apart from the CNN architecture, we also used the Machine Learning Model: SGD to classify the images. At last, we ended up with 60.98% accuracy rate with classifying four types and 80.95% accuracy rate with classifying two types of lung cancer.

Thanks so much to Professor Wang who supported me greatly and fully. I appreciate her for giving me this chance and for guiding me through this magical and wonderful journey.

Calculus Help Center
Sunday-Thursday, 7:30-10:00pm, Sorum House Seminar Room